

Attorney Docket No. **IMMR073/02US**

**PATENT**

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re application of Alex S. GOLDENBERG et al.

Serial No.: **10/671,465**

Examiner: **Unassigned**

Filed: **September 29, 2003**

Art Unit: **2673**

Confirmation No.: **7950**

For: **CONTROLLING HAPTIC SENSATIONS FOR VIBROTACTILE  
FEEDBACK INTERFACE DEVICES**

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**INFORMATION DISCLOSURE STATEMENT TRANSMITTAL**

Enclosed is an Information Disclosure Statement and accompanying Form PTO/SB/08A for the above-identified patent application.

- In accordance with 37 C.F.R. §1.97(b), no additional fee for submission of the IDS is required.
- In accordance with 37 C.F.R. §1.97(c), also enclosed is:
  - the fee of \$180.00 as set forth in 37 C.F.R. §1.17(p); or
  - a statement as specified in 37 C.F.R. §1.97(e).
- In accordance with 37 C.F.R. §1.97(d), a statement as specified in 37 C.F.R. § 1.97(e) and the fee of \$180.00 as set forth in 37 C.F.R. §1.17(p) are also enclosed.
- Check No. \_\_ in the amount of \$\_\_ for the total fee is attached.
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The Commissioner is hereby authorized to charge any appropriate fees under 37 C.F.R. §§1.16, 1.17, and 1.21 that may be required by this paper, and to credit any overpayment, to Deposit Account No. 03-3117.

Dated: January 9, 2004

Cooley Godward LLP  
ATTN: Patent Group  
One Freedom Square  
Reston Town Center  
11951 Freedom Drive  
Reston, VA 20190-5656  
Tel: (703) 456-8000  
Fax: (703) 456-8100

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Respectfully submitted,  
**COOLEY GODWARD LLP**

By:

  
Christopher R. Hutter  
Reg. No. 41,087

Attorney Docket No. **IMMR073/02US****PATENT****IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

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**INFORMATION DISCLOSURE STATEMENT  
UNDER 37 C.F.R. §1.97(b)**

In accordance with the duty of disclosure set forth in 37 C.F.R. §1.56,  
 Applicant(s) hereby submits the following information in conformance with 37 C.F.R.  
 §§1.97 and 1.98.

- No copies of the publications listed on the attached Form PTO/SB/08A (1 of 2) are being provided pursuant to 37 C.F.R. §1.98(d) because the publications were previously cited by or submitted to the Office in prior Application Serial No. 09/669,029 to which the above-identified application claims priority under 35 U.S.C. §120.
- Pursuant to 37 C.F.R. §1.98, a copy of each document cited in the attached Form PTO/SB/08A (2 of 2) is enclosed.
- Publication(s) \_\_\_\_ listed on the attached Form PTO/SB/08A were cited in a foreign search or examination report corresponding to \_\_\_\_ application serial no. \_\_\_\_ and mailed on \_\_\_\_.
- Enclosed is a copy of a non-English publication(s) \_\_\_\_\_. Pursuant to §609 of the M.P.E.P., Applicant submits the attached foreign search or examination report, which cites such non-English language publication(s).
- Enclosed is a copy of a non-English publication(s) \_\_\_\_\_. English language publication \_\_\_\_ (copy enclosed) claims priority from this non-English publication.

- Enclosed is an explanation of non-English publication(s) \_\_ for which an English translation is not available.
- Enclosed is an English translation of non-English publication(s) \_\_ cited in the attached Form PTO/SB/08A.
- Enclosed is a copy of pending patent Application Serial No. 09/608,125.

This Information Disclosure Statement is filed within any one of the following time periods:

- within three months from the filing date of this national application other than a CPA under 37 C.F.R. § 1.53(d);
- within three months from the date of entry of the national stage as set forth in 37 C.F.R. § 1.491 in this international application;
- before the mailing date of a first office action on the merits; or
- before the mailing of a first office action after the filing of a request for continued examination under 37 C.F.R. § 1.114.

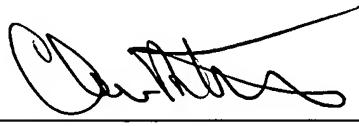
It is respectfully requested that the Examiner consider the above-noted information and return an initialed copy of the attached Form PTO/SB/08A to the undersigned.

Dated: January 9, 2004

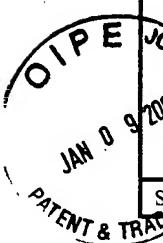
Respectfully submitted,  
**COOLEY GODWARD LLP**

Cooley Godward LLP  
ATTN: Patent Group  
One Freedom Square  
Reston Town Center  
11951 Freedom Drive  
Reston, VA 20190-5656  
Tel: (703) 456-8000  
Fax: (703) 456-8100

By:

  
Christopher R. Hutter  
Reg. No. 41,087

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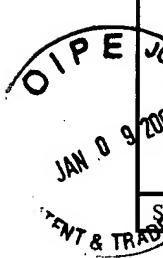
Substitute for form 1449A/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT (use as many sheets as necessary)				<i>Complete if Known</i>	
Sheet	1	of	4	Application Number	Unknown
				Filing Date	September 29, 2003
				First Named Inventor	Alex S. GOLDENBERG
				Group Art Unit	2673
				Examiner Name	Unassigned
				Attorney Docket Number	IMMR-073/02US

PTO/SB/08A (08-00) (1 of 2)

U.S. PATENT DOCUMENTS					
Examiner Initials*	Cite No. <sup>1</sup>	U.S. Patent Document		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY
		Number	Kind Code <sup>2</sup> (if known)		
	A1	6,373,463		Beeks	04/2002
	A2	5,977,867		Blouin	11/1999
	A3	5,785,630		Bobick, et al.	07/28/1998
	A4	5,766,016		Sinclair et al.	06/16/1998
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<sup>1</sup> Unique citation designation number.

<sup>2</sup> See attached Kinds of U.S. Patent Documents.



Substitute for form 1449A/PTO				<i>Complete if Known</i>	
				<b>Application Number</b>	Unknown
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				<b>Group Art Unit</b>	2673
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SEARCHED	2	of	4	<b>Attorney Docket Number</b>	IMMR-073/02US

#### FOREIGN PATENT DOCUMENTS

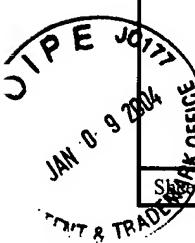
Examiner Initials*	Cite No. <sup>1</sup>	Foreign Patent Document			Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	T <sup>4</sup>
		Office <sup>1</sup>	Number <sup>2</sup>	Kind Code <sup>3</sup> (if known)			
	B1		0 349 086	A1	Stork Kwant B.V.	01/03/1990	

<sup>1</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3).

<sup>2</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document.

<sup>3</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible.

<sup>4</sup> Applicant is to place a check mark here if English language Translation is attached.



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<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b> <i>(use as many sheets as necessary)</i>					
SEARCHED	3	of	4	Application Number	Unknown
				Filing Date	September 29, 2003
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				Examiner Name	Unassigned
				Attorney Docket Number	IMMR-073/02US

OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS					
Examiner Initials*	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.			T <sup>2</sup>
	C1	<b>Baigrie</b> , "Electric Control Loading - A Low Cost, High Performance Alternative," <i>Proceedings of Interservice/Industry Training Systems Conference</i> , pp. 247-254, November 6-8, 1990			
	C2	<b>Iwata</b> , "Pen-based Haptic Virtual Environment," 0-7803-1363-1/93 IEEE, pp. 287-292, 1993			
	C3	<b>Russo</b> , "The Design and Implementation of a Three Degree of Freedom Force Output Joystick," <i>MIT Libraries Archives</i> pp. 1-131, May 1990, archived 8/14/90			
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	C8	<b>Ouh-Young</b> , "Force Display in Molecular Docking," Doctoral Dissertation, University of North Carolina at Chapel Hill, UMI Order No. 9034744, p. 1-369, 1990			
	C9	<b>Tadros</b> , "Control System Design for a Three Degree of Freedom Virtual Environment Simulator Using Motor/Brake Pair Actuators," <i>MIT Archive</i> , pp. 1-88, February 1990, archived 8/13/90			
	C10	<b>Caldwell et al.</b> , "Enhanced Tactile Feedback (Tele-Taction) Using a Multi-Functional Sensory System," 1050-4729/93, pp. 955-960, 1993			
	C11	<b>Adelstein et al.</b> , "Design and Implementation of a Force Reflecting Manipulandum for Manual Control research," DSC-Vol. 42, <i>Advances in Robotics</i> , pp. 1-12, 1992			
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	C14	<b>Russo</b> , "Controlling Dissipative Magnetic Particle Brakes in Force Reflective Devices," DSC-Vol. 42, <i>Advances in Robotics</i> , pp. 63-70, ASME 1992			
	C15	<b>Kontarinis et al.</b> , "Display of High-Frequency Tactile Information to Teleoperators," <i>Telemanipulator Technology and Space Telerobotics</i> , Won S. Kim, Editor, Proc. SPIE Vol. 2057, pp. 40-50, Sep. 7-9, 1993			
	C16	<b>Patrick et al.</b> , "Design and Testing of A Non-reactive, Fingertip, Tactile Display for Interaction with Remote Environments," <i>Cooperative Intelligent Robotics in Space</i> , Rui J. deFigueiredo et al, Editor, Proc. SPIE Vol. 1387, pp. 215-222, 1990			
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	C19	<b>Bejczy et al.</b> , "Generalization of Bilateral Force-Reflecting Control of Manipulators," <i>Proceedings Of Fourth CISMM-IFToMM</i> , Sep. 8-12, 1981			
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	C21	<b>Minsky</b> , "Computational Haptics: The Sandpaper System for Synthesizing Texture for a Force-Feedback Display," <i>Ph.D. Dissertation</i> , MIT, June 1995, archived 7/6/95			
	C22	<b>Jacobsen et al.</b> , "High Performance, Dextrous Telerobotic Manipulator With Force Reflection," <i>Intervention/ROV '91 Conference &amp; Exposition</i> , Hollywood, Florida, May 21-23, 1991			
	C23	<b>Shimoga</b> , "Finger Force and Touch Feedback Issues in Dexterous Telemanipulation," <i>Proceedings of Fourth Annual Conference on Intelligent Robotic Systems for Space Exploration</i> , Rensselaer Polytechnic Institute, Sep. 30- Oct. 1, 1992			
	C24	<b>IBM Technical Disclosure Bulletin</b> , "Mouse Ball-Actuating Device With Force and Tactile Feedback," Vol. 32, No. 9B, February 1990			
	C25	<b>Terry et al.</b> , "Tactile Feedback In A Computer Mouse," <i>Proceedings of Fourteenth Annual Northeast Bioengineering Conference</i> , University of New Hampshire, March 10-11, 1988			
	C26	<b>Howe</b> , "A Force-Reflecting Teleoperated Hand System for the Study of Tactile Sensing in Precision Manipulation," <i>Proceedings of the 1992 IEEE International Conference on Robotics and Automation</i> , Nice, France, May 1992			
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**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**

(use as many sheets as necessary)

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of

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*Complete if Known*

<b>Application Number</b>	Unknown
<b>Filing Date</b>	September 29, 2003
<b>First Named Inventor</b>	Alex S. GOLDENBERG
<b>Group Art Unit</b>	2673
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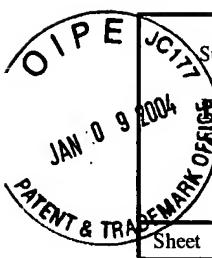
C28	Rabinowitz et al., "Multidimensional tactile displays: Identification of vibratory intensity, frequency, and contractor area," <i>Journal of The Acoustical Society of America</i> , Vol. 82, No. 4, October 1987	
C29	Bejczy et al., "Kinesthetic Coupling Between Operator and Remote Manipulator," <i>International Computer Technology Conference, The American Society of Mechanical Engineers</i> , San Francisco, CA, August 12-15, 1980	
C30	Bejczy et al., "A Laboratory Breadboard System For Dual-Arm Teleoperation," <i>SOAR '89 Workshop, JSC</i> , Houston, TX, July 25-27, 1989	
C31	Ouhyoung et al., "A Low-Cost Force Feedback Joystick and Its Use in PC Video Games," <i>IEEE Transactions on Consumer Electronics</i> , Vol. 41, No. 3, August 1995	
C32	Marcus, "Touch Feedback in Surgery," <i>Proceedings of Virtual Reality and Medicine The Cutting Edge</i> , Sep. 8-11, 1994	
C33	Bejczy, et al., "Universal Computer Control System (UCCS) For Space Telerobots," CH2413-3/87/0000/0318501.00 1987 IEEE, 1987	

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Unique citation designation number.

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**INFORMATION DISCLOSURE  
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PTO/SB/08A (08-00) (2 of 2)

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## FOREIGN PATENT DOCUMENTS

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Examiner Initials*	Cite No. <sup>1</sup>	Foreign Patent Document			Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	T <sup>6</sup>
		Office <sup>3</sup>	Number <sup>4</sup>	Kind Code <sup>5</sup> (if known)			

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